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Guide to the trees and  
shrubs of Minnesota.



GEOLOGICAL AND NATURAL HISTORY SURVEY OF MINNESOTA

FREDERIC E. CLEMENTS, *State Botanist*

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# Minnesota Plant Studies

II.

GUIDE

TO THE

TREES AND SHRUBS OF MINNESOTA

SECOND EDITION

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University of Minnesota  
Minneapolis  
September 1910



Flora

# (Minnesota Plant Studies



II.)  
GUIDE  
TO THE  
TREES AND SHRUBS OF MINNESOTA  
SECOND EDITION

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## Preface

The first edition of the "Guide to the Trees and Shrubs of Minnesota" is completely exhausted. In the preparation of a new edition, the text and keys have been revised, and a number of species, especially cultivated ones, have been added. Occasion has also been taken to provide a number of illustrations, for the sake of giving the student a clearer idea of contrasting terms. The illustrations have been drawn from Gray's "Lessons in Botany," and the authors are under obligation to the publishers, the American Book Company, and to the holders of the copyright of the book for kind permission to use them. As with the other numbers of "Minnesota Plant Studies," copies of the "Guide to Trees and Shrubs" are furnished free upon request. Ten copies are sent free to each high school, academy or college in the State, and additional copies may be obtained at cost, ten cents per copy. The following list indicates the present scope of "Minnesota Plant Studies"; additional numbers of various groups of plants are in preparation.

1. Guide to the Spring Flowers of Minnesota; March 1908 (exhausted)
2. Guide to the Trees and Shrubs of Minnesota; October 1908 (exhausted)
3. Guide to the Ferns and Fern Allies; July 1909
1. Guide to the Spring Flowers, second edition; April 1910
2. Guide to the Trees and Shrubs, second edition; September 1910
4. Minnesota Mushrooms; September 1910
5. Guide to the Autumn Flowers; September 1910

Of the other publications of the Botanical Survey available for schools and plant lovers, "Minnesota Algae" is sent free upon request. The edition of "Minnesota Plant Diseases" is nearly exhausted, and copies can be furnished only to students and those who can make especial use of it. The edition of "Minnesota Plant Life" is completely exhausted, and copies can be obtained only through the dealers in second-hand books.

The University of Minnesota  
September 1910

FREDERIC E. CLEMENTS,  
Professor of Botany and State Botanist.

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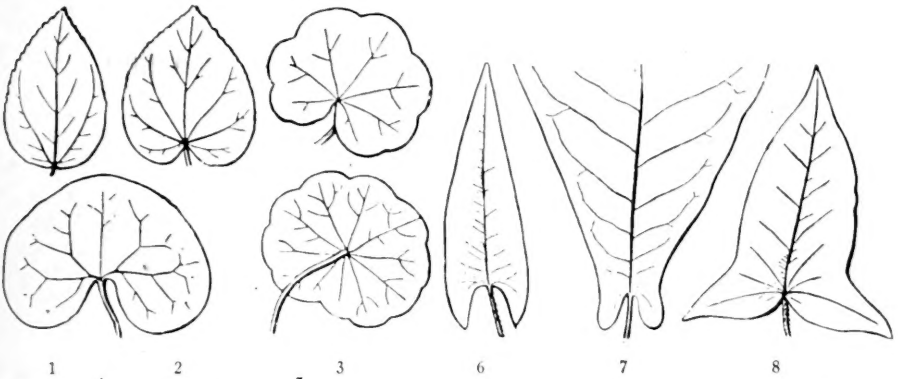


# Introduction

## HOW TO USE THE KEY.

The name of a plant consists as a rule of two parts or words, for example, *Pinus strobus*, *Ulmus americana*, *Acer saccharum*, etc. The first word indicates the *genus*, and is always capitalized. The second word indicates the *species*, or kind, and is never capitalized. The meaning of the terms *genus* (plural, *genera*) and *species* (plural, *species*) may be clearly illustrated by the pines and maples. The white pine, jack pine and Norway pine are different kinds, or *species*, of the *genus* of pines, *Pinus*, each one designated by a species name,

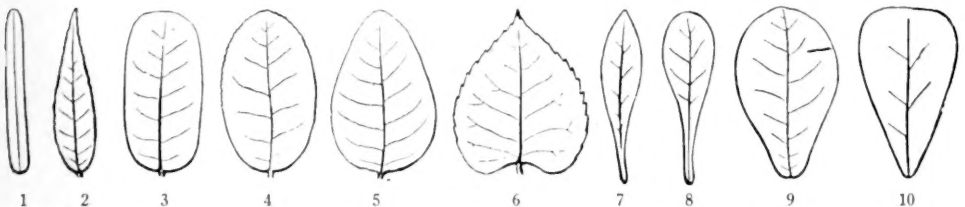
### I. LEAF OUTLINES.



1. Rounded. 2. Cordate (heart-shaped). 3. Reniform (kidney-shaped). 4. Reniform (kidney-shaped). 5. Peltate (shield-shaped). 6. Sagittate (arrow-shaped). 7. Auriculate (eared). 8. Hastate (halberd-shaped).

*strobus*, *divaricata* and *resinosa*, respectively. The hard maple, soft maple, red maple and the boxelder are different species of the maple genus, *Acer*; they are designated by the respective species names, *saccharum*, *saccharinum*, *rubrum* and *negundo*. Genera which are related to each other are placed in the same family, for example, the pines, spruces, firs and larches in the pine family, *Pinaceae*; the roses, apples, plums, cherries, hawthorns, etc. in the rose family, *Rosaceae*. The ending, *-aceae*, which is always used to denote a family, is the feminine plural of the Latin suffix, *-aceus*, meaning *like or related to*. The

### II. LEAF OUTLINES AND BASES.

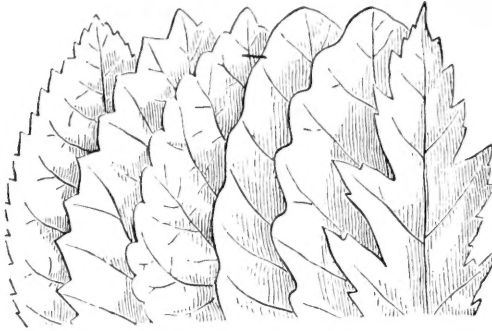


1. Linear. 2. Lanceolate (lance-shaped). 3. Oblong. 4. Elliptic. 5. Oval. 6. Ovate (egg-shaped). 7. Oblanceolate. 8. Spatulate (spatula-like). 9. Obovate (reversed ovate). 10. Cuneate (wedge-shaped).

family name, *Rosaceae*, is really an adjective agreeing with *plantae*, plants, and meaning "plants related to the rose." Related families are themselves grouped into orders, which also bear a distinctive ending, e. g., *Pinales*, *Rosales*. This ending is likewise in the feminine plural, and the meaning of the name is "plant families related to the pine family," etc. Orders are further arranged into larger groups, such as *Monocotyledons*, flowering plants with a single seed leaf, scattered bundles in the stem, parallel-veined leaves, and a flower

plan of 3, and *Dicotyledons*, with two seed leaves, ringed bundles, netted-veined leaves and a flower plan of 5 or 4. These two groups form the *Angiosperms*, with closed pistils and usually with sepals and petals, which are contrasted with the *Gymnosperms*, with open pistils

### III. LEAF EDGES.



1. Serrate (saw-toothed). 2. Dentate (toothed).  
3. Crenate (scalloped). 4. Undulate (wavy).  
5. Sinuate (bayed). 6. Incised (jagged).

descriptions, and then find the name of the species by means of the key given under each genus. In tracing a plant, the beginner should avoid at every turn the temptation to guess

at the points of structure necessary for making a choice. This is equally true of the terms used; it is useless to attempt to find the name of a plant without a clear-cut idea of the difference between simple and compound, opposite and alternate, toothed and entire leaves, etc. Technical terms have been avoided in so far as possible, but the simpler ones are indispensable, and the student should familiarize himself with them as soon as possible. A careful study of the accompanying

and no sepals or petals.

In using the key, the beginner will note that he must choose between "I. Leaves needle-like or scale-like" and "II. Leaves not needle-like or scale-like." In the case of the oak, for example, choice is made of II, and the decision then lies between "1. Trees" and "2. Shrubs and vines." The choice of 1 leads to "a. Leaves simple" and "b. Leaves compound," and then under a to "(1) Leaves not lobed" and "(2) Leaves lobed," and so on by the method of choice until one is lead to the oak genus, *Quercus*. Upon turning to page 16, the student should verify his choice by deciding whether the plant in question agrees with the family and genus descriptions.

### IV. LEAF TIPS.



1. Acuminate. 2. Acute. 3. Obtuse. 4. Truncate. 5. Emarginate.  
6. Obcordate. 7. Cuspidate. 8. Mucronate. 9. Mucronate.

A careful study of the accompanying illustrations will soon give him the knowledge necessary to the ready and trustworthy use of the keys.

### V. LOBED LEAVES.



- Pinnately: 1. Lobed. 2. Cleft. 3. Parted. 4. Divided.  
Palmately: 5. Lobed. 6. Cleft. 7. Parted. 8. Divided.

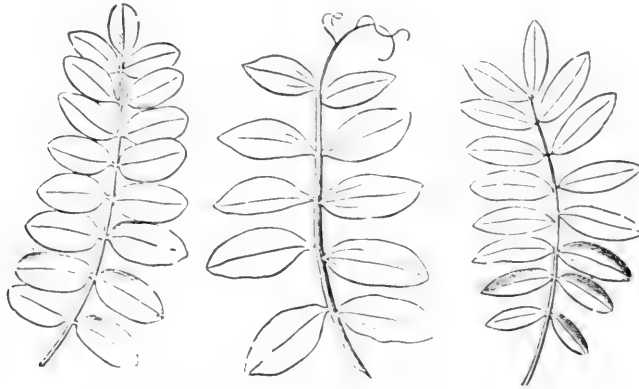
### PRONUNCIATION

The names of plants, families, etc., are pronounced as in Latin. The accent has been indicated for each name. Quantity has not been indicated, since for the beginner all vowels may well be regarded as long. Consonants are essentially the same as in English, with the exception of *c* and *g*, which are always hard, *j* pronounced

like *y* and *v* like *w*. The sound of the vowels may be indicated as follows: *a* as *ah*; *e* as *ay*; *i* as *ee*; *o* as *oh*; *u* as *oo*; Greek *y* much like the German *ii*. The diphthongs are as follows: *ae* as *aye*; *au* as *ow* in *how*; *oe* as *oy*; *ei* as *ay*; *eu* as *eoo*; *ui* as *ooee*.

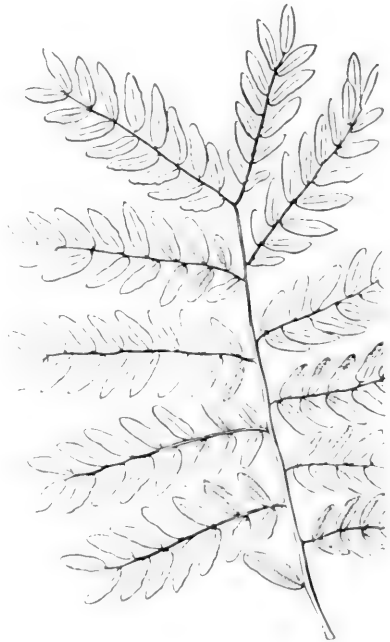
### VERIFICATION AND DETERMINATION OF SPECIMENS

The beginner will necessarily find occasional plants which he is unable to name. Even

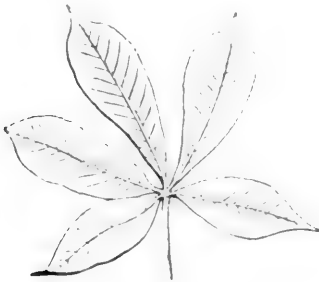


1. Odd-pinnate. 2. Tendril-pinnate. 3. Even-pinnate.

the student of more experience will now and then find very puzzling forms. In such cases, it is necessary to refer the question to a good herbarium if one is accessible, or to the botanist. The department of botany will be glad to have fresh or dried plants sent to it for verification or determination at any time. This applies to mushrooms and other lower forms as well as to flowering plants. Fresh specimens can be sent



5. Twice-pinnate.



4. Palmate or digitate

### VI. COMPOUND LEAVES.

readily through the mails by wrapping them in moist paper and placing them in a paste-board box. The department will also be glad to verify the dried specimens in the herbaria of high schools or of individual students.



# Key to the Genera

## I. Leaves needle-like or scale-like

### 1. Leaves alternate or fascicled

#### a. Leaves all alternate and scattered

##### (1) Trees with fragrant leaves

(a) Leaves square, inserted on prominent bases *Picea: spruce* 7

##### (b) Leaves flat

x. Leaves bright green; cones hanging *Pseudotsuga; Douglas spruce* 7

y. Leaves dark and glossy above, whitish below;  
cones erect *Abies: fir* 7

##### (2) Shrubs, leaves not fragrant

(a) Leaves minute and scale-like, less than 2 mm. long *Tamarix: tamarisk* 19

##### (b) Leaves more than 2 mm. long, not scale-like

x. Leaves turned in at the edge, blunt *Empetrum: crowberry* 15

y. Leaves flat, sharp-pointed *Taxus: yew* 8

#### b. Leaves or some of them fascicled

(1) Leaves deciduous, many in each fascicle *Larix: larch* 7

(2) Leaves persistent, 2-5 in each fascicle *Pinus: pine* 7

### 2. Leaves opposite or in whorls of three

a. Leaves in whorls of three, needle-like, jointed at base *Juniperus: juniper* 8

#### b. Leaves opposite, scale-like, appressed on mature branches

(1) Twigs flattened; pairs of leaves of two kinds alternating *Thuja: arbor vitae* 8

(2) Twigs not flattened; leaves all alike on the same twigs *Sabina: red cedar* 8

## II. Leaves not needle-like or scale-like

### 1. Trees

#### a. Leaves simple

##### (1) Leaves not lobed

##### (a) Leaves ovate to round, broad

x. Leaves entire, very large *Catalpa: catalpa* 22

##### y. Leaves serrate to dentate

(x) Twigs very tough; fruit round, persistent,  
stalk winged *Tilia: basswood* 20

(y) Twigs brittle; fruit disappearing in spring *Populus: cottonwood* 19

##### (b) Leaves somewhat oblong, much longer than broad

x. Leaves opposite *Viburnum: black haw* 18

y. Leaves both opposite and alternate, persistent in autumn *Rhamnus: buckthorn* 13

##### z. Leaves alternate

##### (x) Leaves two-ranked, or apparently so

m. Sap milky; small trees *Morus: mulberry* 20

##### n. Sap not milky

##### (m) Leaves with one distinct midvein

r. Bark smooth, except when very old,  
spotted *Carpinus: hornbeam* 16

##### s. Bark rough

- |   |                                   |    |
|---|-----------------------------------|----|
| (r) Leaves very oblique at base; bark coarsely furrowed | <i>Ulmus: elm</i>                 | 20 |
| (s) Leaf base not oblique; bark finely furrowed         | <i>Ostrya: ironwood</i>           | 16 |
| (n) Leaves with three large veins at base; bark ridged  | <i>Celtis: hackberry</i>          | 20 |
| (y) Leaves not two-ranked                               |                                   |    |
| m. Bark with long conspicuous lenticels                 | <i>Betula: birch</i>              | 16 |
| n. Bark without conspicuous lenticels                   |                                   |    |
| (m) Leaves doubly serrate or toothed                    |                                   |    |
| r. Stems and twigs more or less thorny                  | <i>Crataegus: hawthorn</i>        | 11 |
| s. Stems and twigs without thorns                       | <i>Malus: apple</i>               | 10 |
| (n) Leaf margin with a single row of teeth              |                                   |    |
| r. Buds small, scales overlapping, many; fruit fleshy   | <i>Prunus: plum, cherry</i>       | 11 |
| s. Buds larger, covered by a single scale; fruit dry    | <i>Salix: willow</i>              | 19 |
| (2) Leaves lobed  |                                   |    |
| (a) Leaves opposite                                     | <i>Acer: maple</i>                | 15 |
| (b) Leaves alternate                                    |                                   |    |
| x. Leaves two-ranked                                    | <i>Morus: mulberry</i>            | 20 |
| y. Leaves more than two-ranked                          |                                   |    |
| (x) Leaves deeply cut-lobed; bark white                 |                                   |    |
| m. Leaves small, bark separating into papery layers     | <i>Betula: birch</i>              | 16 |
| n. Leaves silvery beneath, bark not papery              | <i>Populus: poplar</i>            | 19 |
| (y) Leaves less lobed; bark not white                   |                                   |    |
| m. Leaf margin toothed                                  |                                   |    |
| (m) Stems and twigs thorny                              | <i>Crataegus: hawthorn</i>        | 11 |
| (n) Stems and twigs not thorny                          | <i>Malus: apple</i>               | 10 |
| n. Leaf margin entire                                   | <i>Quercus: oak</i>               | 16 |
| b. Leaves compound                                      |                                   |    |
| (1) Leaves palmate                                      |                                   |    |
| (a) Leaflets 3  | <i>Ptelea: hoptree</i>            | 20 |
| (b) Leaflets many                                       | <i>Aesculus: horse chestnut</i>   | 14 |
| (2) Leaves pinnate                                      |                                   |    |
| (a) Leaves even-pinnate                                 |                                   |    |
| x. Leaves twice-compound                                |                                   |    |
| (x) Leaves 3-9 dm. long; leaflets ovate                 | <i>Gymnocladus: coffee tree</i>   | 11 |
| (y) Leaves 1-2½ dm. long; leaflets oblong               | <i>Gleditsia: honey locust</i>    | 11 |
| y. Leaves once-compound                                 | <i>Caragana: pea tree</i>         | 12 |
| (b) Leaves odd-pinnate                                  |                                   |    |
| x. Leaves opposite                                      |                                   |    |
| (x) Leaflets entire or finely serrate                   | <i>Fraxinus: ash</i>              | 21 |
| (y) Leaflets lobed or doubly serrate                    | <i>Acer: boxelder</i>             | 15 |
| y. Leaves alternate                                     |                                   |    |
| (x) Leaflets entire                                     | <i>Robinia: locust</i>            | 12 |
| (y) Leaflets at least finely serrate                    |                                   |    |
| m. Large tree; fruit a nut                              |                                   |    |
| (m) Pith in plates; leaflets 11-23                      | <i>Juglans: walnut, butternut</i> | 15 |
| (n) Pith solid; leaflets 5-11                           | <i>Ilicoria: hickory</i>          | 16 |
| n. Small trees; fruit fleshy, bright red                |                                   |    |
| (m) Sap milky   | <i>Rhus: sumac</i>                | 15 |
| (n) Sap not milky                                       | <i>Sorbus: mountain ash</i>       | 10 |
| 2. Shrubs or vines                                      |                                   |    |
| a. Leaves evergreen and leathery                        |                                   |    |
| (1) Creeping or prostrate shrubs                        |                                   |    |
| (a) Leaves narrowly linear, thick, edges folded back    | <i>Empetrum: crowberry</i>        | 15 |
| (b) Leaves lanceolate to rounded, rarely linear         |                                   |    |

- x. Leaves less than 12 mm. long
  - (x) Leaves much longer than wide *Oxycoccus*: cranberry 21
  - (y) Leaves broadly ovate *Chiogenes*: snowberry 21
- y. Leaves regularly more than 12 mm. long
  - (x) Leaves serrate, fragrant *Gaultheria*: wintergreen 21
  - (y) Leaves entire, not fragrant
    - m. Leaves narrowed at base
      - (m) Leaves scarcely 12 mm. long; pale and resinous below *Vaccinium*:  
mountain cranberry 21
      - (n) Leaves 12-25 mm. long; green and veined below *Arctostaphylus*: bearberry 21
    - n. Leaf base not narrowed; leaf broadly elliptic *Epigaea*: trailing arbutus 21
- (2) Erect shrubs
  - (a) Leaves entire, with revolute margins
    - x. Leaves woolly below *Ledum*: Labrador tea 21
    - y. Leaves smooth and white below
      - (x) Leaves opposite or in threes *Kalmia*: swamp laurel 21
      - (y) Leaves alternate *Andromeda*: moorwort 21
  - (b) Leaves finely toothed *Chamaedaphne*: leatherleaf 21
- b. Leaves deciduous
  - (1) Leaves simple
    - (a) Leaves not lobed on mature twigs
      - x. Leaves opposite
        - (x) Leaves entire
          - m. Leaves silvery-scurfy *Leptargyrea*: buffalo berry 14
          - n. Leaves green
            - (m) Stems hollow
              - r. Low shrubs  $\frac{1}{3}$ -1 m. high *Symphoricarpus*: wolf-berry 18
              - s. Tall shrubs or vines, over 1 m. high *Lonicera*: honeysuckle 18
            - (n) Stems solid
              - r. Leaves pale or hairy beneath
                - (r) Leaves very short-petioled *Lonicera*: honeysuckle 18
                - (s) Leaves long-petioled *Cornus*: dogwood 17
              - s. Leaves not pale or hairy beneath *Syringa*: lilac 20
      - (y) Leaves toothed
        - m. Leaves mostly in whorls of three *Hydrangea*: hydrangea 12
        - n. Leaves in twos, strictly opposite
          - (m) Buds hidden by the petiole *Philadelphus*: syringa 12
          - (n) Buds not hidden
            - r. Leaves coarsely toothed *Viburnum*: viburnum 18
            - s. Leaves finely serrate
              - (r) Bark ridged, roots white *Euonymus*: burning bush 13
              - (s) Shrubs .7-1.3 m. high; bark not ridged
                - h. Petioles distinct; natives *Dierzella*: bush honeysuckle 18
                - i. Petioles very short or lacking; cultivated *Weigelia*: weigelia 18
          - (t) Shrubs 2-5 m. high, petioles wide and glandular *Viburnum*: black haw 18
    - y. Leaves alternate or fascicled
      - (x) Thorny shrubs with fascicled leaves *Berberis*: barberry 8
      - (y) Shrubs or vines with alternate leaves
        - m. Leaves entire
          - (m) Leaves silvery *Elaeagnus*: silverberry 14
          - (n) Leaves not silvery
            - r. Thorny vines *Smilax*: smilax 9

## KEY TO THE GENERA.

- s. Smooth shrubs
  - (r) Tall shrub; leaves crowded at tips of twigs *Cornus: dogwood* 17
  - (s) Low shrubs
    - h. Bark very tough *Dirca: leatherwood* 14
    - i. Bark not especially tough
      - (h) Leaves resinous below *Gaylussacia: huckleberry* 22
      - (i) Leaves not resinous *Vaccinium: huckleberry* 21
- n. Leaves toothed
  - (m) Twining vine *Celastrus: bittersweet* 13
  - (n) Shrubs
    - r. Leaves with three distinct veins *Ceanothus: redroot* 13
    - s. Leaves pinnately veined
      - (r) Leaves unequal at base *Hamamelis: witch hazel* 12
      - (s) Leaf bases equal
        - h. Shrubs with spines or thorns
          - (h) Spiny shrubs, about 1 m., leaves smooth and glossy above *Cydonia: Japanese quince* 10
          - (i) Thorny shrubs, taller, leaves not glossy *Crataegus: hawthorn* 11
        - i. Shrubs without thorns
          - (h) Leaves blunt to rounded at tip
            - p. Leaves fragrant *Myrica: sweet gale* 17
            - q. Leaves not fragrant
              - (p) Cultivated shrub *Spiraea: spiraea* 9
              - (q) Native shrubs
                - e. Tall shrub; leaves over 5 cm. *Alnus: alder* 16
                - f. Low shrub; leaves less than 5 cm.
                  - (e) Swamp shrubs *Betula: birch* 16
                  - (f) Shrubs of dry ground *Amelanchier: juneberry* 10
    - (i) Leaves acute to long-pointed at tip
      - p. Leaves long-pointed
        - (p) Leaves broadly ovate *Corylus: hazel-nut* 16
        - (q) Leaves lanceolate to linear *Salix: willow* 17
      - q. Leaves acute but not long-pointed
        - (p) Fruit fleshy
          - e. Fruit with a single stone *Prunus: plum, cherry* 11
          - f. Fruit several-seeded
            - (e) Fruits solitary or 1-3 in a cluster
              - v. Fruit red *Ilex: winterberry* 14
              - w. Fruit black, some leaves often opposite *Rhamnus: buckthorn* 13
            - (f) Fruits several or many in a loose cluster
              - v. Fruit ripening in mid-summer *Amelanchier: juneberry* 10
              - w. Fruit ripening in the fall *Aronia: chokeberry* 11
          - g. Fruit many-seeded *Vaccinium: huckleberry* 21
        - (q) Fruit dry
          - e. Fruits in catkins; seeds cot-  
tony *Salix: willow* 19
          - f. Fruits in branched clusters *Spiraea: spiraea* 9
- (b) Leaves lobed
  - x. Leaves opposite



- (x) Petioles usually with stipules and glands *Viburnum: viburnum* 16
- (y) Petioles without stipules or glands
  - m. Leaves sharply and deeply lobed *Acer: maple* 15
  - n. Leaves crenately lobed *Symphoricarpus: snowberry* 18
- y. Leaves alternate
  - (x) Leaf margin entire
    - m. Vines with broad palmately veined leaves *Menispermum: moonsced* 9
    - n. Low aromatic shrub with linear leaves *Comptonia: comptonia* 17
    - o. Low densely silky shrubs; leaves with 3-9 linear lobes *Artemisia: wormwood* 19
  - (y) Leaf margin toothed
    - m. High-climbing vines
      - (m) Tendrils coiling, without disks *Vitis: grape* 14
      - (n) Tendrils attached by disks *Parthenocissus: Boston ivy* 13
    - n. Shrubs
      - (m) Bark many-layered, splitting into shreds *Opulaster: ninebark* 9
      - (n) Bark firm
        - r. Tall shrub with thorns *Crataegus: hawthorn* 11
        - s. Bushes, sometimes prickly
          - (r) Leaves 1-2½ dm. broad *Rubus: raspberry* 9
          - (s) Leaves 1-10 cm. broad
            - h. Leaves broad, deeply lobed *Ribes: currant, gooseberry* 12
            - i. Leaves longer than broad, slightly lobed *Spiraea: spiraea* 9
- (2) Leaves compound
  - (a) Leaves pinnate
    - x. Leaves opposite
      - (x) Vines
        - m. Flowers solitary, usually on the old wood *Atrage: atrage* 8
        - n. Flowers clustered on the new wood *Clematis: clematis* 8
      - (y) Shrubs *Sambucus: elderberry* 18
    - y. Leaves alternate
      - (x) Leaf margin entire
        - m. Leaves odd-pinnate
          - (m) Tall spiny shrub with aromatic leaves *Xanthoxylum: prickly ash* 20
          - (n) Low bristly shrub; leaves not aromatic *Robinia: rose acacia* 12
          - (o) Neither spiny nor aromatic
            - r. Leaflets over 5 cm. long *Rhus: poison sumac* 15
            - s. Leaflets 5 cm. or less
              - (r) Leaflets 5-7 *Potentilla: potentilla* 9
              - (s) Leaflets 11-49 *Amorpha: amorpha* 12
        - n. Leaves even-pinnate *Caragana: pea tree* 12
        - (y) Leaf margin toothed
          - m. Leaflets 3-5
            - (m) Low small shrub or tall vine; leaflets obscurely toothed or sometimes lobed *Rhus: poison ivy* 15
            - (n) Spiny bushes; leaflets coarsely toothed *Rubus: raspberry, blackberry* 9
            - (o) Smooth shrubs; leaves finely serrate *Staphylea: bladder nut* 14
          - n. Leaflets 5-many
            - (m) Bushes or vines, usually prickly *Rosa: rose* 10
            - (n) Shrubs
              - r. Sap milky *Rhus: sumac* 15
              - s. Sap clear
                - (r) Tall native shrub *Sorbus: mountain ash* 10
                - (s) Low cultivated shrub *Sorbaria:* 10
    - (b) Leaves palmate
      - x. Vine with tendrils *Parthenocissus: woodbine* 13
      - y. Bushes *Rubus: blackberry* 9



# Spermatophytes      Flowering Plants

## Gymnospermae'      Gymnosperms

### Pinales      Pine Order

#### Pináceae—Pine Family

Resinous trees or shrubs; leaves needle-like or scale-like, usually evergreen; flowers monoecious or dioecious, cone-like; staminate of an elongated axis bearing numerous scale-like or petalate stamens; the pistillate flower of an axis bearing scales in a single or double series, the fertile scales bearing 1-many (usually 2) naked ovules; fruit usually a cone with hard dry scales, occasionally berry-like, the scales becoming fleshy.

#### Picea—Spruce

(*L. picea*, pitch pine)

Evergreen trees; leaves needle-like, usually four-cornered in cross-section, sharp-pointed; cones pendulous with persistent scales.

- |   |                                     |
|---|-------------------------------------|
| 1. Leaves glaucous                                  | <i>P. parryana</i> ; blue spruce    |
| 2. Leaves green                                     |                                     |
| a. Cones over 8 cm. long.                           | <i>P. excelsa</i> ; Norway spruce   |
| b. Cones less than 8 cm. long                       |                                     |
| (1) Twigs glabrous and glaucous; leaves light-green | <i>P. canadensis</i> ; white spruce |
| (2) Twigs pubescent; leaves dark green              | <i>P. mariana</i> ; black spruce    |

#### Pseudotsuga—Douglas Spruce

(*Gr. pseudos*, false, *Jap. tsuga*, hemlock)

Evergreen trees; leaves needle-like, flat in cross-section, soft and blunt; cones pendulous with persistent scales and conspicuous three-pointed bracts.

A single species

*P. taxifolia*; Douglas spruce

#### Abies—Balsam Fir

(*L. abies*, silver fir)

Evergreen trees; leaves needle-like, flat in cross-section, firm and blunt; cones erect, scales falling away from the persistent axis.

Trees with fragrant leaves and balsam-bearing bark.

*A. balsamea*; balsam fir

#### Larix—Larch, Tamarack

(*L. larix*, larch tree)

Deciduous trees; leaves needle-like, very many in each fascicle, soft, bright-yellow in the fall; cones erect or ascending, with persistent scales.

- |  |                                |
|--|--------------------------------|
| 1. Cones 1-2 cm. long; native swamp tree | <i>L. americana</i> ; tamarack |
| 2. Cones 3-5 cm. long; cultivated        | <i>L. europaea</i> ; larch     |

#### Pinus—Pine

(*L. pinus*, pine tree)

Evergreen trees; leaves needle-like, in fascicles of 2-5; cones ascending to pendulous, with persistent scales.

- |  |                                      |
|--|--------------------------------------|
| 1. Leaves five in each fascicle                        | <i>P. strobus</i> ; white pine       |
| 2. Leaves two in each fascicle                         |                                      |
| a. Leaves 10-15 cm. long, thick                        |                                      |
| (1) Leaf sheath long; native                           | <i>P. resinosa</i> ; Norway pine     |
| (2) Leaf sheath short, leaf sharp-pointed; cult.       | <i>P. austriaca</i> ; Austrian pine  |
| b. Leaves 3-8 cm. long, flat                           |                                      |
| (1) Erect trees  |                                      |
| a. Leaves not rigid, twisted, 3-7 cm. long; cultivated | <i>P. sylvestris</i> ; Scotch pine   |
| b. Leaves rigid, straight, 2-4 cm. long; native        | <i>P. dizariata</i> ; jack pine      |
| (2) Dwarf tree or shrub; cultivated                    | <i>P. montana</i> mughus; mugho pine |

## Thúja—White Cedar, Arbor-Vitæ

(Gr. *thya*, arbor vitæ)

Evergreen trees or shrubs; leaves scale-like, small, in opposite pairs, twigs flattened; cones very small, with a few persistent scales.

Swamp tree with flat twigs and scale-like fragrant leaves *T. occidentális*

## Sabína—Red Cedar, Savin

(L. *sabina*, a kind of juniper)

Evergreen trees or shrubs; leaves scale-like, or needle-like, opposite; cones fleshy, berry-like, blue.

- |   |                                  |
|---|----------------------------------|
| 1. Tree or tall shrub                   | <i>S. virginiana</i> ; red cedar |
| 2. Depressed or creeping glaucous shrub | <i>S. sabina</i> ; savin         |

## Juníperus—Juniper

(L. *juniperus*, juniper tree)

Evergreen shrubs; leaves awl-shaped in whorls of 3; cones berry-like, blue.

Shrub with awl-shaped leaves in whorls of 3, blue berries *J. communis*

## Taxáceæ—Yew Family

Evergreen shrubs or trees; flowers dioecious or monoecious, staminate flowers cone-like, consisting of an axis bearing stamens, pistillate flowers not cone-like, much reduced, the ovules commonly solitary and exposed; seeds exposed, with a fleshy outer integument.

## Táxus—Yew

(L. *taxus*, yew tree)

Low evergreen shrub, fruit a red berry *T. minor*

## Angiospermae

## Angiosperms

## Ranales Buttercup Order

## Ranunculáceæ—Buttercup Family

Herbs or climbing shrubs, with simple or compound leaves; sepals 3-15, petals 0-15, stamens 5-many, pistil 1-many; flower apocarpous, apopetalous or apetalous, hypogynous, usually regular.

## Clématis—Clematis

(Gr. *klematis*, a climbing plant)

Herbs or vines, mostly somewhat woody; leaves opposite, pinnate; fruit a feathery achene.

- |  |                      |
|--|----------------------|
| 1. Leaflets toothed; flowering in summer | <i>C. virginiana</i> |
| 2. Leaflets entire; flowering in autumn  | <i>C. paniculata</i> |

## Atrágene—Atragene

(Name unexplained)

Woody vine; leaves opposite, pinnate; fruit a feathery achene.

A single species *A. americana*

## Berberidáceæ—Barberry Family

Herbs or shrubs with alternate simple or compound leaves; flower parts usually in whorls of 3, sepals 6-9, petals 6-9, stamens 6-18, pistil 1, simple; flower apopetalous, hypogynous, regular.

## Bérberis—Barberry

(Arabic name)

Introduced, spiny, deciduous shrubs with fascicled leaves; fruit an elongated red berry.

- |   |                      |
|---|----------------------|
| 1. Leaves serrate; fruit in a raceme    | <i>B. vulgaris</i>   |
| 2. Leaves entire; fruit mostly solitary | <i>B. thunbergii</i> |

## Menispermáceæ—Moonseed Family

Twining vines with alternate leaves; sepals 4-8, petals 6-8, stamens 12-24, pistils 2-4; flower apocarpous, apopetalous, hypogynous, regular.

Menispermum—Moonseed

(Gr. mene, moon, sperma, seed)

Twining vine with ovate leaves and greenish flowers.

A single species

*M. canadense*

Liliales Lily Order

Smilacaceae—Smilax Family

Plants with woody or herbaceous stems, mostly vines, often prickly; leaves broad, net-veined; sepals 3, petals 3, stamens 6, ovary 3-celled; flowers syncarpous, apopetalous, hypogynous, regular, dioecious.

Smilax—Greenbrier

(Gr. smilax, bindweed)

1. Leaves rounded or lanceolate, with 5 veins, prickles not very numerous.
2. Leaves with 7 veins, prickles very numerous

*S. rotundifolia*

*S. hispida*

Rosales Rose Order

Rosaceae—Rose Family

Herbs, shrubs or trees with alternate simple or compound leaves; sepals 5, often with 5 bracteoles alternating with them, petals 5, or rarely 0, stamens 5-many, pistils 1-many, simple and free or with the ovaries united into a 2-10-celled compound ovary; flower apocarpous or syncarpous, apopetalous, hypogynous or mostly perigynous, regular.

Potentilla—Potentilla

(L. potens, powerful)

Herbs or bushes; leaves alternate, compound, entire, silky, leaflets 3-7; fruit of dry seed-like achenes.

A single shrubby species

*P. fruticosa*

Rubus—Blackberry, Raspberry

(L. rubus, bramble-bush)

Shrubs or bushes, sometimes prostrate, usually with prickles; leaves simple and lobed, or compound; fruit a multiple drupe, berry-like.

1. Leaves simple, lobed; stems unarmed
2. Leaves compound
  - a. Stems prostrate
    - (1) Leaflets thick, obtuse; scarcely shrubby
    - (2) Leaflets thin, acute; shrubby
  - b. Stems erect
    - (1) Prickles stout and recurved; fruit solid
    - (2) Prickles weak; fruit hollow
      - (a) Young stems with hooked bristles; rooting at tips, glaucous; fruit black
      - (b) Young stems with weak glandular bristles; fruit red

*R. parviflorus*; thimbleberry

*R. hispidus*; swamp blackberry

*R. canadensis*; dewberry

*R. nigrobaccus*; blackberry

*R. occidentalis*; black raspberry

*R. strigosus*; red raspberry

Opulaster—Ninebark

(L. opulaster, a kind of wild tree)

Shrubs with very shreddy bark; leaves alternate, lobed, simple; fruit a follicle.

A single species

*O. intermedia*

Spiraea—Spiraea

(Gr. spiraea, meadowsweet)

Small shrubs; leaves alternate, simple, toothed or lobed; fruit a follicle.

1. Leaves lobed; cultivated; spring flowering
2. Leaves not lobed; native; summer flowering
  - a. Glabrous or nearly so throughout
  - b. Twigs and lower surfaces of leaves woolly-pubescent

*S. van houttei*

*S. salicifolia*

*S. tomentosa*

## Sorbária

(L. *sorbus*, service tree)

Shrubs with alternate pinnately compound leaves; fruit a follicle.

A single species

*S. sorbifolia*

## Rósa—Rose

(L. *rosa*, a rose)

Bushes, sometimes climbers, usually with prickles; leaves compound, odd-pinnate, leaflets 3-11; fruit fleshy and berry-like, containing many seed-like achenes.

## 1. Native species

- a. Flower branches unarmed or nearly so; sepals erect in fruit

*R. blánda*

- b. Stems all densely prickly

- (1) Leaflets 3-9, often resinous, obtuse at base; flowers solitary

*R. aciculáris*

- (2) Leaflets 7-11, not resinous; flowers several in a cluster

*R. arkansána*

## 2. Cultivated species

## a. Shrubs

- (1) Spines nearly straight, little larger at base

- (a) Leaflets more than 3 cm. long, leathery

*R. rugósa*

- (b) Leaflets about 1 cm. long, not leathery

- x. Leaves glandular, fragrant when crushed

- (x) Twigs brown, densely spiny; flowers yellow

*R. hemisphaérica*

- (y) Twigs green; spines scattered; flowers pink

*R. rubiginósa*; *sweet brier*

- y. Leaves glabrous, scentless; spines numerous, bristle-like

*R. spinosíssima*; *Scotch rose*

- (2) Spines enlarged at base, stout and often hooked; garden hybrids

## b. Vines

- (1) Stipules entire

*R. setigera*; *prairie rose*

- (2) Stipules deeply cut

*R. multiflora*; *rambler rose*

## Cydónia—Quince

(Named for the city Cydon in Crete)

Trees or shrubs with alternate simple leaves; fruit a many-seeded pome.

Low thorny cultivated shrub with glossy leaves and scarlet flowers *C. japónica*

## Sórbus—Mountain Ash

(L. *sorbus*, service-tree)

Trees or shrubs; leaves alternate, compound, odd-pinnate, leaflets many; fruit berry-like, red and fleshy, borne in large clusters.

1. Leaflets acuminate, smooth on both sides

*S. americana*

2. Leaflets more or less obtuse, hairy on the lower side

*S. sambucifolia*

## Málus—Apple

(L. *malus*, apple-tree)

Trees or shrubs; leaves alternate, toothed or lobed; fruit a pome.

1. Leaves narrowed at the base; native

*M. ioënsis*; *wild crabapple*

2. Leaves rounded or cordate at base; cultivated

*M. malus*; *apple*

## Ameláncier—June-berry, Service-berry

(The Savoy name)

Trees or shrubs; leaves alternate, simple, toothed; fruit berry-like, red and fleshy.

1. Leaves rounded or truncate at apex

*A. alnifolia*

2. Leaves narrowed and acute at the apex

- a. Flowers and fruits 1-4 in a cluster

*A. oligocarpa*

- b. Flowers and fruits several to many in a cluster

- (1) Hairs of young leaves quickly disappearing

*A. canadënsis*

- (2) Hairs of young leaves dense, woolly and persistent

*A. botryápium*

## Arónia—Chokeberry

(Name unexplained)

Trees or shrubs; leaves alternate, simple, toothed; fruit berry-like.

1. Inflorescence and lower sides of leaves woolly *A. arbutifolia*
2. Inflorescence and leaves glabrous *A. nigra*

## Crataégus—Thorn, Hawthorn

(Gr. *krataegos*, a thorn)

Trees or shrubs, usually spiny; leaves alternate, simple, usually both toothed and lobed; fruit a scarlet pome.

1. Leaves merely serrate
  - a. Leaves 2-5 cm. long; thorns 5-10 cm. long *C. crus-galli*
  - b. Leaves 5-8 cm. long; thorns 2-5 cm. long *C. punctata*
2. Leaves distinctly lobed, as well as serrate
  - a. Leaves broadly ovate, 8-12 cm. long; twigs dense hairy *C. mollis*
  - b. Leaves elliptic to ovate, 5-8 cm. long; twigs smooth
    - (1) Leaves mostly fine-hairy below *C. succulenta*
    - (2) Leaves mostly smooth below *C. coccinea*

## Prúnus—Plum, Cherry

(L. *prunus*, plum tree)

Trees or shrubs; leaves alternate, simple, toothed; fruit fleshy with a single stone, i. e., a drupe.

1. Dwarf shrubs with narrow leaves
  - a. Branches wand-like; leaves thin, acute at apex; eastern *P. pumila*
  - b. Branches bushy; leaves thick, somewhat acute; western *P. besseyi*
2. Large shrubs or trees; leaves usually broad
  - a. Branches usually thorny; fruit solitary
    - (1) Stone of fruit flat *P. nigra*
    - (2) Stone of fruit round *P. americana*
  - b. Branches not thorny; fruit clustered
    - (1) Fruit black in a raceme; leaves strong-smelling when bruised
      - (a) Shrub or small tree with broadly ovate leaves *P. virginiana*
      - (b) Large tree with narrow ovate or lanceolate leaves *P. serotina*
    - (2) Fruit red in a small corymb; leaves not strong-smelling *P. pennsylvanica*

## Fabáceae—Pea Family

Herbs, shrubs, vines or trees with alternate mostly compound leaves; sepals 4-5, petals 5, rarely fewer, stamens 10, usually in two groups, pistil 1, simple, 1-many seeded; flower apopetalous, hypogynous or perigynous, irregular. The typical flower of this family, e. g., the pea, has the sepals united into an irregular cup. The petals are of three forms, an upper odd petal (standard), two lateral spreading petals (wings) and the two lower ones (keel) more or less united and enclosing the stamens and pistils. The stamens are usually united by their filaments in a group of nine, the tenth stamen being free.

## Gledítsia—Honey Locust

(Named for Gleditsch)

Large thorny trees; leaves alternate, once or twice compound, even-pinnate, leaflets many; fruit a large flat twisted pod.

A single species

*G. triacantha*

## Gymnócladus—Kentucky Coffee-tree

(Gr. *gymnos*, naked, *klados*, branch)

Trees; leaves alternate, twice-compound, even-pinnate, sometimes odd-pinnate, leaflets many; fruit a short thick pod.

A single species

*G. dioica*

## Robínia—Locust

(Named for the brothers Robin)

Thorny trees or shrubs; leaves alternate, compound, odd-pinnate, leaflets 9-19; fruit a flat straight pod.

- |   |                                |
|---|--------------------------------|
| 1. Tree with glabrous foliage and twigs | <i>R. pseudacácia; locust</i>  |
| 2. Low shrub with bristly twigs         | <i>R. hispida; rose acacia</i> |

## Amórpha—Amorpha

(Gr. *amorphe*, formless)

Low shrubs or bushes; leaves alternate, compound, odd-pinnate, glandular-dotted; fruit a small curved pod; in dense spikes.

- |  |                     |
|--|---------------------|
| 1. Tall, 1-3 m. high; leaflets 2-5 cm. long                | <i>A. fruticósa</i> |
| 2. Low shrubs, one third-1 m. high; leaflets 6-12 mm. long |                     |
| a. Densely silky-hairy all over                            | <i>A. canéscens</i> |
| b. Smooth, or nearly so                                    | <i>A. nána</i>      |

## Caragána—Pea tree

Shrubs or small trees; leaves alternate, compound, even pinnate; fruit a narrow pod.

- |                                      |                       |
|--------------------------------------|-----------------------|
| 1. Small tree, leaflets 8-18         | <i>C. arboréscens</i> |
| 2. Shrub, leaflets 4, almost palmate | <i>C. frutéscens</i>  |

## Saxifragáceae—Saxifrage Family

Shrubs or herbs; leaves alternate or opposite; sepals 5, rarely 4, petals 5, rarely none, stamens 5-10, ovary 1-several-celled; fruit various; flower syncarpous, apopetalous, perigynous to epigynous, regular.

## Hydránga—Hydrangea

(Gr. *hydro*, water, *angeion*, vessel)

Shrubs or small trees; leaves opposite or whorled, simple, toothed; fruit a membranous capsule.

A single cultivated species

*H. paniculáta grandiflóra*

## Philadélphus—Mock Orange, Syringa

(Gr. *philadelphos*, a sweet-flowering shrub)

Shrubs; leaves opposite, simple; fruit a many-seeded capsule.

- |  |                        |
|--|------------------------|
| 1. Leaves broadly ovate, 8-12 cm. long               | <i>P. grandiflórus</i> |
| 2. Leaves elliptic or ovate-elliptic, 12-20 cm. long | <i>P. coronárius</i>   |

## Hamamelidáceae—Witch Hazel Family

Trees or shrubs; leaves alternate, simple, toothed or lobed; sepals 5-6, united, petals 4-many or none, stamens 4-many, ovary 2-celled; fruit a capsule; flower syncarpous, apopetalous or apetalous, perigynous, regular.

## Hamamélis—Witch Hazel

(Gr. *hamamelis*, service-tree)

Shrubs; leaves alternate, simple, wavy-toothed; fruit a woody capsule.

A single species

*H. virginíana*

## Grossulariáceae—Gooseberry Family

Shrubs with alternate or clustered leaves and often with spines; sepals 4-5, petals 4-5, stamens 4-5, ovary 1-celled; flowers syncarpous, apopetalous, epigynous, regular.

## Ríbes—Gooseberry, Currant

(Of uncertain derivation)

Shrubs or bushes; leaves alternate, simple, lobed; fruit a berry, red or black.

- |  |                      |
|--|----------------------|
| 1. Stems usually with spines; gooseberries |                      |
| a. Spines stout, usually in threes         | <i>R. uva-críspa</i> |
| b. Spines slender                          |                      |
| (1) Branches usually densely bristly       | <i>R. lacústre</i>   |
| (2) Branches with few or no bristles       |                      |



- (a) Petioles smooth *R. missouriense*
- (b) Petioles pubescent
- x. Berries prickly *R. cynosbati*
- y. Berries smooth *R. oxycanthoides*
- 2. Stems always smooth; currants
- a. Leaf lobes few-toothed or entire *R. aureum*
- b. Leaf lobes toothed throughout
- (1) Leaves with resinous dots, at least below
  - (a) Swamp species *R. hudsonianum*
  - (b) Woodland species *R. floridum*
- (2) Leaves without resinous dots
  - (a) Upright cultivated shrub *R. vulgare*
  - (b) Prostrate native shrub *R. triste*

## Celastrales Bittersweet Order

### Celastraceae—Bittersweet Family

Trees and shrubs, sometimes climbing, with simple, opposite or alternate leaves; sepals 4-5, more or less united, petals 4-5, stamens 4-5, ovary 3-5-celled; fruit fleshy, dehiscent; flower syncarpous, apopetalous, hypogynous, regular.

#### Euonymus—Burning Bush, Wahoo

(Gr. *eu*, good, *onyma*, name)

Shrubs; leaves opposite, simple, entire or toothed; fruit a 3-5-lobed capsule.  
A single species *E. atropurpureus*

#### Celastrus—Bittersweet

(Gr. *kelastron*, an evergreen tree)

Woody climbers; leaves alternate, simple, finely toothed; fruit a yellow 2-4-celled capsule, exposing the scarlet aril when ripe.  
A single species *C. scandens*

### Rhamnaceae—Buckthorn Family

Shrubs or small trees, with alternate simple leaves; sepals 4-5, petals 4-5, rarely none, stamens 4-5, ovary 2-5-celled; flower syncarpous, apopetalous or apetalous, perigynous, regular.

#### Rhamnus—Buckthorn

(Gr. *rhamnos*, buckthorn)

Shrubs or small trees; leaves alternate or sometimes opposite, simple; fruit berry-like, black.

- 1. Often thorny; leaves 3-6 cm. long; large shrub or tree *R. cathartica*
- 2. Thornless; leaves 5-10 cm. long; small shrub *R. alnifolia*

#### Ceanothus—Redroot

(Gr. *keanothus*, a kind of thistle)

Shrubs or bushes; leaves alternate, simple, toothed; fruit a 3-lobed capsule.

- 1. Leaves ovate to ovate-oblong, finely hairy *C. americanus*
- 2. Leaves oblong or oval, nearly smooth *C. ovatus*

### Vitaceae—Grape Family

Woody vines with tendrils; leaves alternate, simple and lobed, or compound; sepals 4-5, often minute, petals 4-5, often disappearing as the flower opens, stamens 4-5, ovary 2-6-celled, fruit a berry; flower syncarpous, apopetalous, hypogynous or perigynous, regular.

#### Parthenocissus—Woodbine, Virginia Creeper

(Gr. *parthenos*, maiden, *kissos*, ivy)

Woody climbers; leaves alternate, lobed or palmate, leaflets usually 5; fruit a black berry.

- 1. Leaves palmate *P. quinquefolia*; woodbine
- 2. Leaves simple and lobed *P. tricuspidata*; Boston ivy

## GRAPE FAMILY—MAPLE FAMILY

## Vitis—Grape

(L. *vitis*, grapevine)

Woody climbers; leaves alternate, simple, lobed; fruit a dark blue berry.

1. Lower leaf surface velvety or woolly; berries large; cult. *V. labrusca*
2. Lower leaf surface nearly smooth; berries small; native *V. vulpina*

## Thymeleáceae—Leatherwood Family

Shrubs; leaves alternate; sepals 4-5, petals 0, stamens 8-10, pistil 1, simple; fruit berry-like; flower apetalous, perigynous, regular.

## Dirca—Leatherwood

Shrubs; leaves alternate, simple, entire; fruit berry-like, reddish.

A single species

*D. palustris*

## Elaeagnáceae—Oleaster Family

Shrubs with silvery leaves; sepals 4, petals 0, stamens 4-8, pistil 1, simple; fruit berry-like; flower apetalous, apparently epigynous, regular, often dioecious.

## Elaeagnus—Silverberry

(Gr. *elaiagnos*, a marsh shrub)

Shrubs or small trees; leaves alternate, simple, entire, silvery; fruit silvery.

1. Twigs with brown scales; native *E. argentea*
2. Twigs without brown scales, often thorny; cultivated *E. angustifolia*

## Lepargyrea—Buffalo-berry

(Gr. *lepis*, scale, *argyreos*, silvery)

Shrubs; leaves opposite, simple, entire, silvery; fruit red or yellow.

A single species

*L. argentea*

## Ilicáceae—Holly Family

Shrubs or trees; leaves alternate, simple, entire or toothed; fruit small, berry-like; sepals 3-6, petals 4-6, stamens usually 4-6, ovary 3-several-celled; flower syncarpous, apopetalous, perigynous, regular.

## Ilex—Holly

(L. *Ilex*, holly oak)

Shrubs or trees; leaves alternate, simple; fruit a berry-like drupe, red or black.

A single species with small red berries

*I. verticillata*

## Sapindales Maple Order

## Staphyleáceae—Bladdernut Family

Trees or shrubs; leaves opposite, pinnate; sepals 5, petals 5, stamens 5, ovary 2-3-celled, fruit bladdery; flower syncarpous, apopetalous, perigynous, regular.

## Staphyléa—Bladdernut

(Gr. *staphyle*, a bunch of grapes)

Leaves pinnately trifoliate

*S. trifolia*

## Hippocastanáceae—Horse Chestnut Family

Trees or shrubs; leaves opposite, palmate; fruit a leathery capsule; sepals 5, petals 4-5, stamens 5-8, ovary 3-celled; flower syncarpous, apopetalous, perigynous, somewhat irregular.

## Aesculus—Buckeye

(L. *aesculus*, a kind of oak)

Trees or shrubs; leaves usually of 5 leaflets; fruit often prickly.

A single species

*Ae. glabra*

## Aceráceae—Maple Family

Trees or large shrubs with opposite, lobed or compound leaves; sepals 5, petals 5 or 0, sta-

mens usually 5 or 8, ovary 2-celled, fruit a pair of winged pistils; flower syncarpous, apopetalous or apetalous, perigynous, dioecious or polygamous, usually regular.

### Acer—Maple

(L. *acer*, maple tree)

Trees or large shrubs; leaves simple and lobed or compound; fruit winged, i. e., samaras.

1. Leaves simple, palmately lobed
  - a. Shrub with persistent fruit *A. spicatum*; mountain maple
  - b. Trees
    - (1) Bark deeply furrowed, fruit persistent *A. saccharum*; hard maple
    - (2) Bark not deeply furrowed, fruit falling in June
      - (a) Leaves about 3-lobed, lobes not narrowed at base *A. rubrum*; red maple
      - (b) Leaves deeply 5-lobed, lobes narrowed at base *A. saccharinum*; soft maple
      - (c) Leaves finely and deeply cut; cultivated *A. saccharinum* *var.* *negundo*; cut-leaf maple
2. Leaves compound, pinnate *A. negundo*; boxelder

### Empetraceae—Crowberry Family

Low evergreen shrubs; leaves alternate, small, linear, entire; fruit a berry-like drupe; sepals 3, petals 2-3, or none, stamens 2-4, ovary 2-several-celled; flower syncarpous, apopetalous or apetalous, dioecious or polygamous, regular.

#### Empetrum—Crowberry

(Gr. *en*, in, *petros*, stone)

Depressed shrubs with small simple evergreen leaves; fruit berry-like, black.

- A single species *E. nigrum*

### Anacardiaceae—Sumac Family

Trees, shrubs or woody vines, usually with alternate compound leaves; sepals 3-7, petals 3-7 or none, stamens 3-7, ovary 1-celled; fruit a dry drupe; flower syncarpous, usually apopetalous, perigynous, regular.

#### Rhus—Sumac, Poison Ivy

(Gr. *rhous*, sumac)

Shrubs or vines, rarely small trees; leaves alternate, compound, pinnate, leaflets 3-35; fruit berry-like, red or white. Our white-berried species are poisonous to the touch, the red-berried ones are harmless.

1. Erect shrubs or trees; leaflets numerous
  - a. Leaflets toothed; fruit red
    - (1) Twigs hairy *R. hirta*; stag-horn sumac
    - (2) Twigs smooth *R. glabra*; smooth sumac
  - b. Leaflets deeply lobed and cut—cultivated forms
    - (1) Twigs hairy *R. lúta laciniata*
    - (2) Twigs smooth *R. glabra laciniata*
  - c. Leaflets entire, fruit white; poisonous! *R. cernix*; poison sumac
2. Vine or low shrub; leaflets three; poisonous! *R. radicans*; poison ivy

### Juglandaceae—Walnut Family

Trees with alternate odd-pinnate leaves; flowers monoecious, the staminate in catkins; staminate flower with sepals 3-6 or 0, petals 0, stamens 3-many; pistillate flower, sepals 3-5, petals 4 or 0, ovary 1-celled, styles 2; flower syncarpous, apopetalous or apetalous, epigynous, regular.

#### Juglans—Butternut, Black Walnut

(L. *juglans*, walnut tree)

Trees; leaves alternate, pinnate; fruit a dry drupe, containing a furrowed nut.

1. Bark gray, twigs and foliage viscid hairy *J. cinerea*; butternut
2. Bark dark brown, twigs and foliage almost smooth *J. nigra*; black walnut

## Hicória—Hickory, Bitternut

(From the Indian name)

Trees; leaves alternate, pinnate; fruit with a 4-lobed outer coat; nut not furrowed.

1. Bark shaggy, leaves white-tufted at margin *H. ováta*; shag-bark hickory
2. Bark not shaggy, mature leaves almost smooth *H. mínima*; pignut hickory

## Betuláceae—Birch Family

Trees or shrubs with alternate simple leaves; flowers monoecious, rarely dioecious, the staminate and often the pistillate also in catkins; staminate flower, sepals 2-4 or 0, petals 0, stamens 2-10; pistillate flower, sepals minute or 0, ovary 1-2-celled, style 2-cleft; flower syncarpous, epigynous, regular.

## Corylus—Hazel-nut

(Gr. *korys*, helmet)

Shrubs; leaves alternate, simple; fruit enclosed in a leafy cup.

1. Twigs and petioles densely hairy, involucre of nut short *C. americana*; hazel-nut
2. Twigs and petioles smooth, involucre with a beak *C. rostrata*; beaked hazel-nut

## Carpinus—Hornbeam

(Gr. *karpinos*, fruitful)

Trees; leaves alternate, simple; fruit a nut.

Small tree with smooth gray bark and very hard wood *C. caroliniana*

## Ostrya—Ironwood

(Gr. *ostrea*, tree with very hard wood)

Trees; leaves alternate, simple; fruit inflated.

Small tree with furrowed bark and very hard wood *O. virginiana*

## Bétula—Birch

(L. *betula*, birch-tree)

Trees or shrubs; leaves alternate, simple; fruit winged.

1. Trees
  - a. Bark separating in papery layers
    - (1) Bark white
      - (a) Leaves not deeply lobed; native *B. papyrifera*; paper birch
      - (b) Leaves deeply cut and lobed; cultivated *B. álba pendula*; cut-leaf birch
    - (2) Bark yellow or brown
      - (a) Leaves narrowed at base; pistillate catkins stalked *B. nígra*; river birch
      - (b) Leaves round or cordate at base; catkins not stalked *B. lítea*; yellow birch
  - b. Bark not papery, very fragrant; leaves glossy above *B. lénta*; black birch
2. Low shrubs
  - a. Twigs glandular, leaves glabrous *B. glandulosa*; dwarf birch
  - b. Twigs not glandular, young leaves pubescent *B. púmila*; dwarf birch

## Álnus—Alder

(L. *alnus*, alder)

Trees or shrubs; leaves alternate, simple; fruits in a woody catkin.

1. Leaves finely serrate, resinous beneath when young *A. alnobétula*
2. Leaves coarsely serrate, not resinous *A. incána*

## Fagáceae—Beech Family

Trees or shrubs with simple often deeply lobed or cleft leaves; flowers monoecious, the staminate in catkins; staminate flower, sepals 4-7, petals 0, stamens 4-20; pistillate flower, sepals disappearing, petals 0, ovary 3-celled; flower syncarpous, epigynous, regular.

## Quércus—Oak

(L. *quercus*, oak tree)

Trees or shrubs; leaves alternate, simple; fruit an acorn.

1. Leaves deeply cut or lobed

- a. Lobes of leaves acute, bristle-pointed
  - (1) Leaves dull green, cup of acorn shallow *Q. rubra*; red oak
  - (2) Cup about half as long as acorn
    - (a) Scales of cup appressed, smooth
      - x. Acorn much elongated *Q. ellipsoidalis*;  
northern pin oak
      - y. Acorn nearly round *Q. coccinea*; scarlet oak
    - (b) Scales of cup loose, pubescent *Q. velutina*; black oak
- b. Lobes of leaves rounded
  - (1) Leaves dull, smooth, acorn cup not fringed *Q. alba*; white oak
  - (2) Leaves glossy, hairy below; acorn cup fringed *Q. macrocarpa*; bur oak
- 2. Leaves merely crenate
  - a. Large tree; leaves hairy beneath, acorn long-stalked *Q. platanooides*; swamp white oak
  - b. Shrub; leaves smooth, acorn sessile *Q. prinoides*; chestnut oak

## Myricaceae—Bayberry Family

Shrubs or trees with alternate aromatic simple leaves; flower in catkins, monoecious or dioecious; staminate flower, sepals 0, petals 0, stamens 2-16; pistillate flower, with 2-8 bracts, sepals 0, petals 0, ovary 1-celled, stigmas 2; flower syncarpous, naked.

- I. Leaves entire or slightly serrate *Myrica*
- II. Leaves deeply cut *Comptonia*

## Myrica—Sweet Gale

(Gr. *myrike*, tamarisk)

- Shrubs; leaves alternate, simple; fruit a drupe-like nut.
- Fragrant swamp shrub, resembling a small willow *M. gale*

## Comptonia—Comptonia

(Named for Bishop Compton)

- Fragrant shrub with thick, linear, deeply cut leaves *C. peregrina*

## Apiales Carrot Order

## Cornaceae—Dogwood Family

Shrubs and trees, rarely herbs, usually with opposite leaves; sepals 4, rarely 5, petals 4, stamens 4, pistil 1-2-celled, style 1; flower syncarpous, apopetalous, epigynous, regular.

## Cornus—Dogwood

(L. *cornus*, cornel)

Shrubs or small trees; leaves simple, usually opposite, petioled, entire; fruit berry-like, white or blue.

- 1. Leaves opposite
  - a. Twigs green; leaves broadly ovate or rounded *C. amomum*
  - b. Twigs gray; leaves lanceolate *C. candidissima*
  - c. Twigs red, purple or yellow; leaves ovate
    - (1) Leaves pubescent beneath
      - (a) Fruit blue *C. amomum*
      - (b) Fruit white *C. baileyi*
    - (2) Leaves glabrous and glaucous beneath *C. stolonifera*
- 2. Leaves alternate, crowded *C. alternifolia*

## Rubiales Madder Order

## Caprifoliaceae—Honeysuckle Family

Herbs, shrubs or vines with opposite leaves; sepals 3-5, often very tiny, petals 5, stamens 5, ovary 1-6-celled, style 1; flower syncarpous, sympetalous, epigynous, regular or irregular.

## Sambucus—Elder

(L. *sambucus*, elder tree)

Shrubs; leaves opposite, pinnate, leaflets 5-11, serrate; fruit a berry-like drupe.

1. Leaflets ovate-lanceolate, hairy below; pith brown *S. púbens*
2. Leaflets oblong, usually smooth; pith white *S. canadénsis*
3. Leaflets deeply cut and lobed; pith white *S. canadénsis laciniata*

## Viburnum—Viburnum, Cranberry-tree, Snowball

(L. *viburnum*, the wayfaring tree)

Shrubs or small trees; leaves opposite, simple, serrate to lobed; fruit berry-like, 1-seeded.

1. Leaves lobed; fruit red
  - a. Leaves deeply lobed
    - (1) Fruit in a large terminal cluster; native *V. ópulus*; high-bush cranberry
    - (2) Fruit absent; cultivated *V. ópulus stérilis*; snowball
  - b. Leaves slightly and irregularly lobed; fruit lateral *V. pauciflórum*
2. Leaves not lobed; fruit black
  - a. Leaves coarsely dentate *V. pubéscens*; arrow wood
  - b. Leaves finely serrate *V. lentágo*; black haw

## Symphoricárpus—Wolfberry, Snowberry

(Gr. *syn*, together, *phoreo*, bearing, *karpos*, fruit)

Shrubs; leaves opposite, simple, short-petioled; fruit a 2-seeded berry, red or white.

1. Leaves 1-2 cm. long *S. pauciflórus*
2. Leaves 2-8 cm. long
  - a. Berry white; style smooth
    - (1) Leaves mostly 2-5 cm. long *S. racemósus*
    - (2) Leaves mostly 5-8 cm. long *S. occidentális*
  - b. Berry red, persistent; style bearded *S. symphoricárpus*

## Lonícera—Honeysuckle

(From Lonitzer, a German botanist)

Shrubs or climbing vines; leaves opposite, simple, mostly entire, often perfoliate; fruit a berry.

1. Vines; clusters several-flowered, terminal; upper leaves perfoliate
  - a. Low native vine *L. dioéca*
  - b. High-climbing cultivated vine *L. sempérvirens*; trumpet h.
2. Erect shrubs; flowers in pairs
  - a. Leaves somewhat pubescent, not cordate; mostly native
    - (1) Leaf margin bristly
      - (a) Leaves pale, thick, veiny; fruit blue *L. coerúlea*
      - (b) Leaves bright green, thin; fruit red *L. ciliáta*
      - (c) Leaves dark green, thick; fruit red, very persistent; cultivated *L. morrówi*
    - (2) Leaf margin not bristly; fruit red *L. oblongifólia*
  - b. Leaves glabrous, cordate; cultivated *L. tatárica*; twin honeysuckle

## Diervílla—Bush honeysuckle

(Named for Dierville)

Shrubs; leaves opposite, simple, toothed; flowers small; fruit a many-seeded capsule.

A single species

*D. diervílla*

## Weigéla—Weigelia

(Named for Weigel)

Shrubs; leaves opposite, simple, toothed; flowers large; fruit a many-seeded capsule.

A single species

*W. híbrida*

## Asterales

## Aster Order

## Asteráceae—Aster Family

Herbs; flowers in dense heads, sepals usually forming a pappus, petals 5, stamens 5 or 0, ovary 1-celled, stigmas 2, fruit an achene; flower syncarpous, sympetalous, epigynous.

Artemisia—Wormwood

(Gr. *artemisia*, wormwood)

Perennials often with woody stems; leaves divided; fruit an achene.

A single species

*A. frigida*

Caryophyllales

Pink Order

Tamaricaceae—Tamarisk Family

Trees and shrubs with alternate scale-like leaves; sepals 4-5, petals 4-5, stamens 4-5 or many, ovary 1-celled; fruit a capsule with many small hairy seeds; flower syncarpous, apopetalous, hypogynous, regular

Tamarix—Tamarisk

Shrubs or trees with minute scale-like leaves, and dense racemes of very small pink flowers.

Cultivated shrub with flowers in spring, petals 4

*T. parviflora*

Salicaceae—Willow Family

Trees or shrubs with simple leaves; sepals 0, petals 0, stamens 1-60, ovary 1-celled, capsule 2-4-valved, seeds hairy; flowers dioecious, calyx and corolla both lacking.

Salix—Willow

(L. *salix*, a willow-tree)

Trees or shrubs; leaves alternate, simple, buds with a single scale; fruit a capsule, seeds cot-  
tony.

- |   |                       |
|---|-----------------------|
| 1. Leaves and stipules with glands              | <i>S. lucida</i>      |
| 2. Leaves and stipules without glands           |                       |
| a. Leaves glabrous on both sides when mature    |                       |
| (1) Leaves narrow, linear-lanceolate, low shrub | <i>S. fluviatilis</i> |
| (2) Leaves broader, lanceolate to ovate         |                       |
| (a) Leaves oblong-lanceolate, merely acute      | <i>S. discolor</i>    |
| (b) Leaves acuminate                            | <i>S. nigra</i>       |
| b. Leaves pubescent or tomentose below          |                       |
| (1) Leaves oblong, low bog shrub                | <i>S. candida</i>     |
| (2) Leaves broadly lanceolate, or oblanceolate  |                       |
| (a) Leaves elliptic to lanceolate               | <i>S. bebbiana</i>    |
| (b) Leaves oblanceolate                         |                       |
| x. Leaves 5-10 cm. long                         | <i>S. humilis</i>     |
| y. Leaves 2-5 cm. long                          | <i>S. tristis</i>     |

Pópulus—Poplar, Cottonwood, Aspen

(L. *populus*, a poplar-tree)

Trees or shrubs; leaves alternate, simple, buds with several scales; fruit a capsule, seeds cot-  
tony.

- |   |  |
|---|--|
| 1. Leaves with strongly flattened petioles  |  |
| a. Twigs and under surfaces of leaf white-hairy; leaves<br>often deeply lobed, and maple-like | <i>P. álba</i>                           |
| b. Twigs and mature leaves smooth   |  |
| (1) Leaves coarsely wavy-toothed  | <i>P. grandidentata</i>                  |
| (2) Leaves more finely crenate-toothed  |  |
| (a) Leaves round or ovate, short-pointed  | <i>P. tremuloides; aspen</i>             |
| (b) Leaves truncate at base, long-pointed   |  |
| x. Branches spreading; crown broad  | <i>P. deltoides; cottonwood</i>          |
| y. Branches erect; crown very narrow  | <i>P. nigra italica; Lombardy poplar</i> |
| 2. Leaves with round or channeled petioles  |  |
| a. Leaves smooth on both sides  | <i>P. balsamifera; balsam poplar</i>     |
| b. Leaves hairy below   | <i>P. candicans; balm of gilead</i>      |

## Malvales Mallow Order

## Tiliaceae—Linden Family

Trees or shrubs with alternate simple leaves and a clear sap; sepals 5, petals 5-6, stamens many, usually in 5-10 groups, ovary 2-10-celled; fruit berry-like; flower syncarpous, apopetalous or apetalous, hypogynous, regular.

## Tilia—Basswood, Linden

(L. *tilia*, linden)

Trees; leaves alternate, simple, serrate, usually with unequal bases; fruit dry, 1-2-seeded.  
A single species *T. americana*

## Moraceae—Mulberry Family

Trees with simple leaves and usually a milky juice; sepals 4-5, petals 0, stamens 4-5, ovary 1-celled; flower syncarpous, apetalous, hypogynous.

## Morus—Mulberry

(Gr. *morea*, mulberry-tree)

Trees; leaves alternate, simple; fruit aggregate, berry-like.  
Tree with milky sap and dentate leaves *M. rubra*

## Ulmaceae—Elm Family

Trees with alternate simple serrate leaves; sepals 3-9, petals 0, stamens 3-9, ovary 1-celled, stigmas 2; flowers perfect to polygamous, syncarpous, apetalous, hypogynous.

## Ulmus—Elm

(L. *ulmus*, elm-tree)

- Trees; leaves alternate, simple; fruit winged.
1. Bud-scales densely brown hairy, samara not ciliate *U. fulva*; slippery elm
  2. Bud-scales smooth, samara ciliate
    - a. Some of the twigs with corky lines, sides of fruit hairy *U. racemosa*; rock elm
    - b. None of the twigs with corky lines, sides of fruit smooth *U. americana*; white elm

## Celtis—Hackberry

Trees; leaves alternate, simple; fruit a berry-like drupe.  
Tree with ridged bark, and simple serrate leaves *C. occidentalis*

## Geraniales Geranium Order

## Rutaceae—Rue Family

Trees or shrubs, usually with compound leaves; sepals 4-5 or none, petals 4-5, stamens 4-10, pistils distinct, 2-5, or compound; flower apocarpous or syncarpous, apopetalous, hypogynous, regular.

## Xanthoxylum—Prickly Ash

(Gr. *xanthos*, yellow, *xylon*, wood)

Trees or shrubs usually spiny; leaves alternate, odd-pinnate; fruit fleshy.  
Small tree; leaves pinnate, leaflets 5-11; flowers greenish *X. americanum*

## Ptelea—Hoptree

(Gr. *ptelea*, elm)

Shrubs or small trees, smooth; leaves alternate, 3-5-foliate; fruit a 2-winged samara.  
A single species *P. trifoliata*

## Oleaceae—Olive Family

Trees or shrubs with simple or pinnate leaves; sepals 4, petals 2-4 or none, stamens 2-4, ovary 2-celled; flowers perfect to dioecious, syncarpous, often apetalous, hypogynous, regular.

## Syringa—Lilac

(Gr. *syrix*, a tube)

- Shrubs; leaves opposite, simple, entire; fruit a leathery capsule.
1. Leaves ovate, cordate at base, 5-12 cm. long *S. vulgaris*
  2. Leaves smaller, not cordate, 2-8 cm. long *S. persica*



Fráxinus—Ash

(*L. fraxinus*, ash-tree)

Trees; leaves opposite, pinnate; fruit winged.

1. Lateral leaflets sessile *F. nigra*; black ash
2. Lateral leaflets stalked
  - a. Wing mostly at the end of fruit *F. americana*; white ash
  - b. Wing extending down the sides of fruit
    - (1) Leaves and twigs velvety *F. pennsylvanica*; red ash
    - (2) Leaves and twigs smooth *F. lanceolata*; green ash

Ericáceae—Heath Family

Herbs or shrubs with simple leaves; sepals 4-5, petals 4-5, stamens 4-10, ovary 2-5-celled, flower syncarpous, usually sympetalous, hypogynous, regular.

Lédum—Labrador Tea

(Gr. *ledon*, an oriental shrub)

Evergreen shrub with simple entire leaves; flowers white *L. groenlandicum*

Kálmia—Swamp Laurel

(Named for Peter Kalm)

Evergreen shrubs with purple flowers *K. glauca*

Andrómeda—Moorwort

(Named from Andromeda)

Evergreen shrub with linear leaves; white flowers in umbels *A. polifolia*

Chamaedáphne—Leatherleaf

(Gr. *chamae*, on the ground, *Daphne*)

Leaves oblong, scurfy, denticulate; flowers white, in 1-sided racemes *C. calyculata*

Epigaea—Trailing Arbutus

(Gr. *epigeios*, on the earth)

Leaves oval; flowers rose-colored *E. repens*

Arctostáphylus—Bearberry

(Gr. *arctos*, bear, *staphyle*, grape)

Leaves spatulate; flowers white or pinkish *A. uva-ursi*

Gaulthéria—Wintergreen

(Named for Gaulther)

Evergreen shrub; leaves alternate, simple, serrate *G. procumbens*

Vacciniáceae—Huckleberry Family

Shrubs with alternate simple leaves; sepals 4-5, petals 4-5, stamens 8-10, ovary 2-10-celled; flower syncarpous, mostly sympetalous, epigynous, regular.

Oxycoccus—Cranberry

(Gr. *oxys*, sour, *kokkos*, berry)

Creeping evergreen shrubs with very small ovate to oblong leaves; fruit a scarlet berry.

1. Leaves oval or oblong, obtuse *O. macrocarpus*
2. Leaves ovate, acute *O. oxycoccus*

Chiógenes—Snowberry

(Gr. *chion*, snow, *genes*, born)

Creeping evergreen shrubs with oval leaves; flowers and fruit white *C. hispidula*

Vaccínium—Huckleberry, Blueberry, Cranberry

(*L. vaccinium*, blueberry)

Shrubs, rarely evergreen; leaves alternate, simple; fruit a berry, blue to red.

1. Leaves evergreen *V. vitis-idaea*; mountain c.

## 2. Leaves deciduous

## a. Low shrubs, 1-6 dm. high

(1) Leaves pale and glaucous beneath

*V. uliginósum*; bilberry

(2) Leaves green or hairy below

(a) Leaves green and shining on both sides

*V. caespitósum*; bilberry

(b) Leaves not shining below but usually hairy

x. Twigs and leaves pubescent

*V. canadénse*; blueberry

y. Twigs and leaves glabrous

*V. pennsylvánicum*; blueberry

## b. Tall shrubs, 6 dm.-5 m. high

(1) Stems 6 dm.-2 m. high

*V. stamineum*

(2) Stems 2-5 m. high

*V. corymbósum*

## Gaylussácia—Huckleberry

(Named for the chemist, Gay-Lussac)

Shrubs; leaves alternate, simple, entire or toothed; fruit berry-like, blue or black.

A single species

*G. resinósa*

## Scrophulariales

## Snapdragon Order

## Bignoniáceae—Trumpet-creeper Family

Trees or vines with compound or simple leaves; sepals 5, petals 5, stamens 2-4, ovary 2-celled; flowers syncarpous, sympetalous, hypogynous, irregular.

## Catálpa—Catalpa

(The Indian name)

Trees; leaves opposite, simple, entire; fruit an elongated capsule.

A single species

*C. catálpa*

# Glossary

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- Achene** A dry, one-seeded fruit
- Acuminate** Gradually tapering to a point
- Acute** Sharp-pointed
- Alternate** Not opposite; with a single leaf at each place of attachment
- Annual** Lasting only one growing season
- Anther** The upper part of the stamen, containing the pollen; the pollen pouch
- Apetalous** Without petals
- Apex** Tip or upper end
- Apocarpous** Having or consisting of separate carpels
- Apopetalous** Having or consisting of separate petals
- Appressed** Lying close to or against another organ
- Aquatic** Growing in the water
- Ascending** Growing obliquely upward
- Awl-shaped** Narrowed upward from the base to a slender, rigid point
- Awn** A slender bristle-like structure
- Awn-pointed** Tipped with an awn
- Axil** The angle between leaf and stem
- Axillary** Borne in the axils of leaves
- Axis** A term generally applied to that portion of a branch which bears the flowers or the parts of a flower
- Barbed** Having a tip like a fish-hook
- Basal** Arising from the base
- Beak** An elongated tapering structure
- Beaked** Bearing a beak
- Bearded** With hairs limited more or less to a certain area of an organ
- Berry** A fruit in which the seeds are imbedded in a soft or fleshy substance
- Biternate** Twice ternate
- Blade** The flat expanded part of a leaf
- Bract** A leaf, usually small, standing below a flower or a flower-cluster
- Bracteole** A small leaf or scale on the pedicel below the flower
- Bristle** A stiff hair or any similar outgrowth
- Bulb** A short stem with fleshy scales, usually subterranean
- Bulblets** Small bulbs
- Bulbous** Like a bulb; bearing bulbs
- Capsule** A dry fruit consisting of two or more carpels
- Carpel** A simple pistil, or one member or division of a compound pistil
- Catkin** An elongated axis covered with scales all around that bear either stamens or pistils
- Cell** A cavity or chamber in an ovary
- Ciliate** Provided with marginal hairs
- Claw** Applied to the much narrowed lower portion of a petal
- Cleft** Cut about half way to the middle
- Climbing** Growing upon a support of some kind
- Compound** Composed of two or more similar parts united into one whole
- Compound leaf** One divided into separate leaflets
- Cone** An elongated axis bearing stamens or thickened scales with naked ovules; the flower and fruit of conifers

- Convolute** Rolled up lengthwise  
**Cordate** Heart-shaped  
**Corm** A swollen fleshy base of a stem  
**Corymb** A flat-topped or convex open flower cluster  
**Creeping** Growing along the ground  
**Crenate** Scalloped; with rounded, shallow teeth  
**Crenate-toothed** With rounded teeth  
**Cyme** A flower cluster in which the terminal or middle flower blossoms first; usually somewhat flat
- Deciduous** Falling off at the close of the growing period  
**Declined** Bent down  
**Decurrent** Applied to leaf bases, running down the stem  
**Dentate** Toothed, with outwardly projecting teeth  
**Denticulate** With small teeth  
**Depressed** Vertically flattened  
**Dioecious** Bearing pistils and stamens on different plants  
**Disk** An enlargement of the axis of a flower around the base of the pistil; the group of tubular flowers in the Asteraceae  
**Dissected** Cut or divided into numerous segments  
**Divided** Lobed to the base
- Entire** Without lobes, divisions, or teeth  
**Epigynous** Applied to a flower with the parts upon the ovary  
**Erect** Standing upright  
**Even-pinnate** Without an odd leaflet at the tip  
**Exserted** Projecting beyond the surrounding parts
- Fascicle** A dense cluster  
**Fascicled** Borne in dense clusters  
**Fertile** Bearing seeds, or bearing pollen  
**Filament** The stalk bearing the anther  
**Fleshy** Soft, containing more or less sap  
**Flower** An axis bearing stamens or pistils or both; generally sepals and petals are associated with these  
**Fruit** A ripened ovary, sometimes that part of the axis which becomes fleshy as the seeds ripen
- Glabrous** Without hairs  
**Gland** A secreting surface or structure; any small appendage or protuberance having the appearance of such an organ  
**Glandular** With glands or gland-like  
**Glaucous** Covered with a bluish or white, fine, mealy substance, a bloom  
**Globose** Spherical or nearly so  
**Glume** The small scale of the spikelets of grasses and sedges
- Hastate** Arrow-shaped but with the basal lobes diverging  
**Head** A dense cluster of sessile or nearly sessile flowers on a very short axis  
**Herb** A non-woody plant which dies annually, at least down to the ground  
**Herbaceous** Of the nature of herbs  
**Hispid** With bristly stiff hairs  
**Hirsute** With somewhat coarse, stiff hairs  
**Hypogynous** Applied to a flower, with the other parts below the ovary

**Included** Not projecting beyond the surrounding parts  
**Indehiscent** Applied to fruits that do not open or split to let out the seeds  
**Inferior** Applied to an organ situated below another one  
**Inflorescence** The position of a plant bearing the flowers; mode of arrangement of flowers  
**Integument** A projecting layer or coat, as the covering of a seed  
**Internode** The part of the stem between two successive nodes  
**Involucre** A group of leaves or scale-like leaves borne just underneath a flower or a close cluster of flowers  
**Involucral** Of an involucre  
**Irregular** Applied to a flower in which the petals, or other parts, are unlike

**Keel** The two fused lower petals of the flower of the Pea Family  
**Keeled** Ridged, like the keel of a boat

**Lanceolate** Shaped like a lance  
**Lenticel** A corky projection on the bark  
**Ligule** A strap-shaped organ, as the rays in the Asteraceae  
**Ligulate** In the form of a strap  
**Linear** Long and narrow with sides nearly parallel  
**Linear-lanceolate** Narrowly lance-shaped  
**Lip** Each of the main upper and lower divisions of a zygomorphic corolla or calyx; the peculiar modified petal of an orchid flower  
**Lipped** Having a lip  
**Lobed** Margin more or less deeply cut or divided

**Monoecious** Bearing stamens and pistils on the same plant but in different flowers

**Nerve** One of the lines or ridges running through a leaf  
**Net-veined** Veins running in various directions and connecting with each other  
**Netted-veined** Veins running in various directions and connecting with each other  
**Nodding** Hanging on a bent pedicel  
**Node** The part of the stem which normally bears a leaf  
**Nut** A dry, one-seeded, indehiscent fruit with a stony shell or covering  
**Nutlet** A diminutive nut

**Obcordate** Inversely heart-shaped  
**Oblanceolate** Inverse of lanceolate  
**Oblong** Somewhat longer than broad, with the sides nearly parallel  
**Oblong-lanceolate** Broadly lance-shaped  
**Obtuse** Rounded or blunt  
**Odd-pinnate** With an odd leaflet at the tip  
**Opposite** Applied to organs inserted at the same level but 180° apart  
**Orbicular** Circular  
**Ovary** The part of the pistil in which the young seeds are borne  
**Ovate** Shaped like the outline of an egg  
**Ovule** A young seed

**Palmate** Radiately lobed or divided  
**Palmately** In a palmate manner  
**Panicle** A compound flower cluster, the lower branches longest and blossoming first  
**Pappus** The bristles, hairs, awns and like structures which are borne upon the fruit in the Chicory and Aster Families  
**Parasitic** Growing upon and getting its nourishment from some other plant  
**Parted** Deeply cleft  
**Peduncle** The stalk of a flower or of a flower cluster

- Pedicel** The stalk of a flower in a flower-cluster
- Peltate** Shaped like a shield with a stalk attached in the middle below
- Perennial** Lasting from year to year
- Perfect** A flower having both stamens and pistils
- Perfoliate** Leaves appearing to be pierced by the stem
- Perigynous** Applied to a flower in which the parts are united into a cup around the ovary
- Perigynium** The sack-like membrane enclosing the ovary or the achene in the genus *Carex*
- Persistent** Organs that remain attached after the growing season
- Petal** One of the inner set of flower leaves, usually brightly colored, of a corolla
- Petaloid** Resembling a petal, especially as to color
- Petiole** The stalk of a leaf
- Pilose** With long soft hairs
- Pinnate** Leaves divided into leaflets or segments along a common stalk
- Pinnately** In a pinnate manner
- Pinnatifid** Pinnately cleft to the middle or beyond
- Pistil** The central or terminal organ in a flower, containing the young seeds
- Pistillate** With pistils but without stamens
- Plumose** Having fine hairs on each side like a feather
- Plumy** Feathery
- Pod** A dry fruit made up of one carpel and splitting along two sides
- Pollen** The minute grains found in the anther
- Puberulent** With very short hairs
- Pubescent** With hairs
- Raceme** A more or less elongated axis bearing flowers with about equal pedicels
- Ray** One of the marginal flowers in the Asteraceae
- Receptacle** The end of a flower stalk or axis bearing the floral organs; in the Asteraceae bearing flowers
- Recurved** Bent back
- Regular** Having the members of each part alike in size and shape
- Reniform** Kidney-shaped
- Resinous** Bearing resin
- Retrose** Turned downward or backward
- Revolute** Margin rolled back
- Rhombic** In outline like a rhombus; obliquely four-sided
- Rootstock** An underground stem
- Rotate** Flat and circular in outline; wheel-shaped
- Rush-like** Resembling a rush
- Salver-form** Having a slender tube, abruptly expanded into a flat limb
- Samara** A winged fruit
- Scabrous** Rough
- Scale** A minute or much reduced leaf
- Scape** A leafless or nearly leafless stalk bearing a flower or a cluster of flowers and arising from the underground portion of a plant
- Scurfy** With small bran-like scales on the epidermis
- Segment** One of the parts of a flower or similar organ that is cleft or divided
- Sepal** One of the outer set of flower leaves, usually green
- Serrate** With teeth projecting forward
- Serrulate** Finely serrate
- Sessile** Without a stalk or pedicel
- Sheath** The part of a leaf or leaf base which clasps or encloses the stem
- Sheathing** A term applied to the manner in which the base of a leaf wraps the stem
- Shrub** A woody plant; smaller than a tree
- Simple** Of one piece, not compound

**Sinuate** With strongly wavy margins  
**Spadix** A fleshy axis bearing sessile flowers  
**Spathe** A leaf-like structure standing below an inflorescence  
**Spatulate** Spoon-shaped, shaped like a spatula  
**Spike** An axis bearing sessile flowers  
**Spikelet** A small few-flowered spike, the flower cluster of grasses and sedges  
**Spine** A sharp, woody or rigid outgrowth from the stem  
**Spiny** Provided with spines  
**Spur** A hollow projection from the sepal or petal of a flower  
**Stamen** The organ of a flower which bears the pollen  
**Staminate** With stamens but without pistils  
**Staminoids** A sterile stamen  
**Standard** The large upper petal of the flower of the Pea Family  
**Stigma** The top of the pistil to which pollen grains become attached  
**Stipule** Outgrowths of, or appendages to the base of a petiole  
**Strap-shaped** Long and narrow in outline  
**Style** The narrowed or pointed part of the pistil, bearing on its top the stigma  
**Stylopodium** A disk-like expansion at the base of the style, as in the Apiaceae  
**Submerged** Under water  
**Subtend** To stand below on the axis  
**Superior** Applied to an organ situated above another one  
**Sympetalous** Having or consisting of united petals  
**Syncarpous** Having or consisting of carpels joined together

**Teeth** The regular projection along the margin of a leaf  
**Tendril** A slender coiling organ  
**Ternate** Consisting of three leaflets  
**Terrestrial** Growing on the ground  
**Thorn** A stiff, sharp-pointed outgrowth from the bark or rind  
**Tomentose** Covered with dense, matted, wool-like hairs  
**Trailing** Creeping along the ground  
**Trifoliate** Having three leaflets  
**Truncate** Terminated by a nearly straight edge or surface  
**Twining** Winding spirally about a support

**Umbel** A flower-cluster with all the pedicels arising from the same point  
**Umbellate** Borne in umbels  
**Unarmed** Without spines, thorns, or prickles

**Valve** One of the portions into which some dry fruits split; a trapdoor-like opening in the pollen chambers of some anthers  
**Vestigial** Reduced almost to disappearance  
**Villous** With long soft hairs not matted together

**Webby** With a tuft of slender, curly hairs  
**Whorl** A group of three or more similar organs, as leaves, radiating from the place of attachment  
**Whorled** Borne in a whorl  
**Wing** One of the two lateral petals of the flower of the Pea Family

**Zygomorphic** Applied to a flower with petals of different form





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